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#19
Appeal Brief
10-16-03
L. Sprull

Docket No.: A-2465

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MAIL STOP: APPEAL BRIEF-PATENTS

By: _____ Date: September 29, 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

Applicant : Siegfried Kurtzer

Applic. No. : 09/656,333

Filed : September 6, 2000

Title : Printing Machine with Equilibrium or Equalization of Moments or Torques

Examiner : Ren Luo Yan - Art Unit: 2854

BRIEF ON APPEAL

Hon. Commissioner for Patents,

S i r :

This is an appeal from the final rejection in the Office action dated April 25, 2003, finally rejecting claims 1, 2 and 7-11.

Appellants submit this *Brief on Appeal* in triplicate, including payment in the amount of $320.00 to cover the fee for filing the *Brief on Appeal*.

10/08/2003 AWONDAF1 00000021 09656333
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Real Party in Interest:

This application is assigned to Heidelberger Druckmaschinen AG of Heidelberg, Germany. The assignment will be submitted for recordation upon the termination of this appeal.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 1, 2 and 7-11 are rejected and are under appeal. Claim 3 was cancelled in an amendment filed on February 12, 2003. Claim 4 was cancelled in an amendment submitted on March 4, 2002. Claims 5 and 6 were cancelled in an amendment filed on August 12, 2002.

Status of Amendments:

Claims 7 and 9 were amended after the final Office action. *An amendment under 37 CFR § 1.116* was submitted on July 25, 2003. The Primary Examiner stated in an *Advisory Action* dated August 14, 2003, that the amendment after final would not be entered upon the filing of a *Notice of Appeal*.

Summary of the Invention:

As stated in the first paragraph on page 1 of the specification of the instant application, the invention relates to a printing machine with equilibrium or equalization of moments or torques and, more particularly, to a printing machine having at least one roller for transporting material to be printed and at least a first and a second functional element which execute a cyclic movement that is synchronized with a rotational movement of the roller and which are driven, together with the roller, by a drive unit, the functional elements, respectively, having assigned thereto a spring element that is stressed in one phase of the cyclic movement and is relieved of stress in another phase thereof. Functional elements of this type are generally widespread in printing machines, for example, in the form of sheet grippers which are mounted on the rollers and which, respectively, have to be open in a defined position of the roller in order to accept a material sheet to be printed, have to be in a closed state so as to draw the sheet along a transport path thereof through the printing machine and, in a second orientation of the roller, have to be opened so that the sheet can leave the roller and can be transferred to a different roller or a delivery.

Appellant explained on page 10 of the specification, line 2, that, referring now to the drawings and, first, particularly

to Fig. 1 thereof, there is shown therein an impression cylinder 1 and, in contact with the circumferential surface thereof, a feed cylinder 2 and a delivery cylinder 3. The feed cylinder 2 has a sheet gripper 5, and the impression cylinder, which has a circumference four times that of the feed cylinder 2, has four sheet grippers 6_1, 6_2, 6_3 and 6_4, respectively, which are arranged at an interval of 90° from one another.

Appellant further explained on page 10 of the specification, line 11, that the construction of the sheet grippers 5, 6_1, 6_2, 6_3 and 6_4 is largely identical. Taking for example the sheet gripper 6_2, as illustrated, each of the sheet grippers includes a clip or yoke 10 that extends over the width of the roller in order to clamp one edge of a sheet firmly onto the outer surface of the roller, and which is suspended articulatedly at a location 12 on the roller by lateral arms 11. A second arm 13 is rigidly connected to the arm 11 and, at the end thereof, bears a roller 14 which rolls on a cam disk 7 of the impression cylinder 1 or, respectively, on a cam disk 8 of the feed cylinder 2. The cam disks 7 and 8, respectively, are fixed in position, while the cylinders 1 and 2, respectively, rotate in relation thereto. A helical or spiral return spring 15 holds the roller 14 pressed against the surface of the cam disk 7 and 8, respectively.

Appellant outlined on page 11 of the specification, line 1, that, in the case of the sheet grippers 6_1 to 6_4 of the impression cylinder 1, the closed position wherein the sheet gripper 6_2 is illustrated corresponds to the state wherein the helical return spring 15 is relieved of stress. If the roller 14 rolls on an area of the cam disk 7 having a greater radius than that at the location of the gripper 6_2, the clip 10 is spread away from the surface of the impression cylinder 1, and the spring 15 is stressed. In the case of the sheet gripper 5 of the feed cylinder 2, the behavior is quite the opposite. When the roller runs on an area with a large radius of the cam disk 8 and the helical spring is stressed, the clip is closed; the position wherein the spring is relieved of stress corresponds to the open position of the clip.

Appellant further outlined on page 11 of the specification, line 15, that, with a transmission ratio of 1:1, a gearwheel 9 is meshed with a gearwheel that is not specifically shown but belongs to the feed cylinder 2, and drives a third cam disk 18 to perform a rotational movement. With the aid of a cantilever arm 20 that is rigidly connected to the pregripper 4, a roller 19 that rolls on the cam disk 18 converts the rotation of the cam disk 18 into an oscillating movement of

the pregripper 4. A compression spring 21 holds the roller 19 pressed against the cam disk 18.

Appellant stated in the last paragraph on page 11 of the specification, line 25, that the operating cycle of the printing machine is explained hereinafter with reference to Fig. 2, as well.

It is described on page 12 of the specification, line 2, that Fig. 1 shows the pregripper 4 in a position wherein it transfers a non-illustrated sheet to be printed to the sheet gripper 5 of the feed cylinder 2. While the feed cylinder 2 continues to rotate in clockwise direction from the position thereof shown in Fig. 1, the pregripper 4 follows it until the sheet gripper 5 has clamped the sheet on the circumferential surface of the feed cylinder 2 and holds it firmly. When this has been done, the pregripper 4 releases the sheet and swings in the opposite direction in order to fetch a further sheet from a feed pile.

Appellant further outlined on page 12 of the specification, line 13, that Fig. 2 shows the course or profile of the drive torques of the various functional elements of the printing machine of Fig. 1 as a function of or in accordance with a machine rotational angle, which is referred here to the

rotation of the feed cylinder 2. The configuration shown in Fig. 1 corresponds approximately to a machine angle of 190° in Fig. 2.

It is also stated on page 12 of the specification, line 20, that the drive torque of the pregripper is illustrated as a somewhat dotted-line curve 40. The drive torque is positive in an angular range from about 160 to about 290°, which corresponds to a movement of the pregripper 4 in the direction of the feed cylinder 2 with simultaneous compression of the spring 21. In the angular range from about 290 to about 70°, the pregripper 4 returns to the feed stack, the compression spring 21 being relieved of stress and exerting a driving torque on the entire arrangement.

Appellant described on page 13 of the specification, line 4, that the torque profile of the sheet gripper 5 is illustrated as a curve 41 formed by dashes. Positive values of this curve in the range from 180 to 220° correspond to the closing movement of the pregripper with the simultaneous application of stress to the spring thereof.

It is also set forth on page 13 of the specification, line 10, that in Fig. 1, the sheet gripper 6_1 is illustrated in a closed position thereof. This position is necessary in order

that the sheet gripper 6_1 can pass through a bottleneck 16, wherein a non-illustrated washing device for cleaning the impression cylinder is arranged. After passing through the bottleneck 16, the sheet gripper 6_1 opens, driven by a forward projection 7_1 on the cam disk 7. The curve 42 formed as a dot-dash line shows the profile of the drive torque for the sheet gripper 6_1 in Fig. 2. The closing movement prior to the passage through the non-illustrated washing device extends over an angular range from about 180 to 240°. Because this closing movement takes place with a simultaneous relief of the stress on the associated spring, it acts like an additional drive. The action of opening the gripper 6_1 on the rising edge of the projection 7_1 takes place at angles from about 275 to 310°, and the immediately following renewed closing as the sheet is accepted by the gripper 5 extends over an angle from about 310 to 0°.

It is explained on page 14 of the specification, line 4, that, approximately while the sheet gripper 6_1 is traversing the bottleneck 16, the sheet gripper 6_4 is passing a surrender position for surrendering a printed sheet to the delivery cylinder 3. In this position, the sheet gripper 6_4 has to open in order to release the sheet. This is performed with a simultaneous application of stress to the spring, and the corresponding drive torque is illustrated as a curve 43

formed as a continuous solid line which has positive values approximately between 265 and 300°.

It is further explained on page 14 of the specification, line 14, that a curve 50 formed as a thick solid line shows the fluctuations of the drive torque over the course of one revolution of the feed cylinder 2. It is believed to be apparent that the section of the curve 41 of the sheet gripper 5, wherein the curve has positive values, completely overlaps a negative-value section of the curve 42 of the sheet gripper 6_1. In this way, the additional drive torque needed to close the sheet gripper 5 is made available completely by the spring of the sheet gripper 6_1, and, in addition, this spring even further compensates to some extent for the drive torque needed for the movement of the pregripper 4. The negative section of the curve 42 may conveniently be synchronized with the closing phase of the sheet gripper 5, in the case of the construction shown in Fig. 1, because, for the functioning of the printing machine it is simply a case of the gripper 6_1 being closed before it passes through the bottleneck 16, but it is completely unimportant, however, at which point on the path of the gripper from the discharge position on the delivery cylinder 3 to the bottleneck this closing movement takes place. If the distance between these two points is greater than one

circumferential length of the feed cylinder 2, synchronization is always possible.

Appellants outlined on page 15 of the specification, line 11, that, of course, the principle described herein specifically for the case of drive torque compensation between sheet grippers of the impression cylinder and of the feed cylinder or the pregripper can also be applied to other situations wherein movements of functional elements, to be executed cyclically, lead to an oscillation of the necessary drive torque. It would therefore also be conceivable, for example, to synchronize the individual sheet grippers of the impression cylinder 1 of Fig. 1 with one another in such a way that the closing of one gripper during the acceptance of a sheet to be printed by the feed cylinder 2 coincides with the opening of another sheet gripper during the surrender or discharge of a printed sheet onto the delivery cylinder 3.

References Cited:

U.S. Patent No. 5,271,323 (Münker), dated December 21, 1993;

U.S. Patent No. 5,839,366 (Schaede), dated November 24, 1998.

Issues

1. Whether or not claims 1, 2, 8, and 10 are anticipated by Schaede (U.S. Patent No. 5,839,366) under 35 U.S.C. §102(b).

2. Whether or not claim 11 is obvious over Schaede (U.S. Patent No. 5,839,366) in view of Münker (U.S. Patent No. 5,271,323) under 35 U.S.C. §103.

Grouping of Claims:

Claim 1 is independent. Claims 2-3 and 7-11 depend on claim 1. The patentability of claims 2-3 and 7-11 are not separately argued. Therefore, claims 2-3 and 7-11 stand or fall with claim 1.

Arguments:

Arguments regarding the patentability of claim 1.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, *inter alia*:

the second sheet transport cylinder having a position defined for accepting a sheet to be printed from the first sheet

transport cylinder and a position defined for surrendering the printed sheet and, on a path from the surrender position to the acceptance position, the second sheet gripper being actuatable for executing one of a movement stressing the spring element assigned thereto and a movement relieving the stress, while said first sheet gripper being actuatable for executing one of a closing movement relieving the stress on the spring element assigned thereto and a closing movement stressing the spring element.

The Schaede reference discloses a first transport cylinder (3) and a second transport cylinder (4), and an impression cylinder (2) disposed between the first and second transport cylinders (3 and 4). The first transport cylinder (3) has two dipping grippers (10 and 12) and the second transport cylinder (4) has two dipping grippers (16 and 18). A disc cam (19) controls the opening and closing movements of the dipping grippers (10 and 12) on the first transport cylinder (3). A disk cam (21) controls the opening and closing movements of the dipping grippers (16 and 18) on the second transport cylinder (4).

The reference does not show a second sheet transport cylinder having a position defined for accepting a sheet to be printed from the first sheet transport cylinder and a position

defined for surrendering the printed sheet and, on a path from the surrender position to the acceptance position, the second sheet gripper being actuatable for executing one of a movement stressing the spring element assigned thereto and a movement relieving the stress, while the first sheet gripper being actuatable for executing one of a closing movement relieving the stress on the spring element assigned thereto and a closing movement stressing the spring element, as recited in claim 1 of the instant application.

The second sheet gripper (gripper 6.1-6.4) as claimed in claim 1 of the instant application is closed "relieving the stress on a path from the surrender position to the acceptance position", in order to compensate a momentum of the gripper system 5 of the transport cylinder 3.

The Schaede reference does not disclose any proposal for the compensation of momentum. It can especially be seen in Fig. 1 that the disc cam (21) continually keeps the dipping grippers (16 and 18) in an open position while traveling in the defined path from the interchange point of transport cylinder (4) and the transfer cylinder (30) to the interchange point of the transport cylinder (4) and the impression cylinder (2). Likewise, the disc cam (19) continually keeps the dipping grippers (10 and 12) in an open

position while traveling in the defined path from the interchange point of transport cylinder (3) and the impression cylinder (2) to the interchange point of the transport cylinder (3) and the transfer cylinder (29). Therefore, the dipping grippers (10 and 12) of the first transport cylinder (4) cannot compensate for any momentums that are created by the dipping grippers (16 and 18) of the second transport cylinder (3)

Regarding the Examiner's response to arguments on pages 3-4 of the Office action dated April 25, 2003, the following remarks are made:

Appellants comment as follows with regard to the Examiner's comments that the sheet grippers on the transport cylinder of Schaede, on a path from the surrender position to the acceptance position can only do one of two things, raise to the open position upon stressing the spring element and lower to the closed position upon relieving the stress to the spring element. The grippers of Schaede only do <u>one thing</u> on a path from a surrender position to an acceptance position, they <u>are in their opening position</u> upon stressing the spring element. This is supported by the fact that Schaede discloses that according to Fig. 3 the dipping grippers (10) of the dipping gripper arrangement (9) are in their closing

position when the cam roller (25) is located on the area (19a) of the cam (19), the area (19a) being extended radially outwards, otherwise the grippers occupy their opening position (column 3, lines 50-65). As can be seen in Fig. 1 of Schaede, neither cylinder (4) nor cylinder (3) show that the cam (19) extends radially outward between their respective surrender positions and the accepting positions. Therefore, the dipping grippers disclosed in Schaede **are only** in their opening position while on a path from the surrender position to the acceptance position The Schaede reference does not disclose that on a path from the surrender position to the acceptance position, the second sheet gripper is actuatable for executing one of a movement stressing the spring element (open gripper) assigned thereto **and** a movement relieving the stress (closed gripper). This is contrary to the invention of the instant application as claimed, in which on a path from the surrender position to the acceptance position, the second sheet grippers are actuatable for executing one of a movement stressing the spring element (open gripper) assigned thereto **and** a movement relieving the stress (closed gripper).

Regarding the Examiner's comment that the last paragraph of claim 1 requires that the sheet gripper is moveable either to an open position **or** a closed position, it is noted that claim

1 recites a movement stressing the spring element (open gripper) assigned thereto **and** a movement relieving the stress (closed gripper). Therefore, **both movements** occur on the path from the surrender position to the acceptance position, and **not just one or the other** as indicated by the Examiner.

Since claim 1 is believed to be allowable, dependent claims 2, 8, and 10 are believed to be allowable as well.

The Münker reference does not make up for the deficiencies of Schaede. Since claim 1 is believed to be allowable, dependent claim 11 is believed to be allowable as well.

Based on the above-given arguments, the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Respectfully submitted,

Alfred K. Dassler
52,794

For Appellants

AKD/bb

Date: September 29, 2003
Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, Florida 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101

Appendix - Appealed Claims:

1. A printing machine, comprising:

a drive unit;

rollers having a rotational movement and including a first sheet transport cylinder and a second sheet transport cylinder;

a first sheet gripper mounted on said first sheet transport cylinder;

a second sheet gripper mounted on said second sheet transport cylinder;

said first and second grippers executing cyclical movements having phases and being synchronized with said rotational movement of said rollers and driven, together with said rollers, by said drive unit;

said first and second grippers having respective spring elements, said spring elements being stressed in one of said phases of the cyclic movement and relieved of stress in another of said phases of the cyclic movement, a respective one of said phases having a first one of said spring elements

stressed being synchronized with a respective one of said phases having a second one of said spring elements relieved of stress;

said second sheet transport cylinder having a position defined for accepting a sheet to be printed from the first sheet transport cylinder and a position defined for surrendering the printed sheet and, on a path from said surrender position to said acceptance position, said second sheet gripper being actuatable for executing one of a movement stressing said spring element assigned thereto and a movement relieving the stress, while said first sheet gripper being actuatable for executing one of a closing movement relieving the stress on said spring element assigned thereto and a closing movement stressing said spring element.

2. The printing machine according to claim 1, including a cam disk for aiding in coupling the cyclic movement of each of the first and second grippers to the rotational movement of the rollers.

7. The printing machine according to claim 1, wherein said impression cylinder has a circumference that is a given number of times the circumference of said feed cylinder and

includes a number equal to said given number of said second sheet grippers rotating with said impression cylinder.

8. The printing machine according to claim 1, wherein said surrender position is defined so that the length of said path of said sheet gripper from said surrender position to said acceptance position is from at least half to all of the circumferential length of said feed cylinder.

9. The printing machine according to claim 1, wherein the movement of said second sheet gripper of said impression cylinder is a closing movement for passing through a bottleneck.

10. The printing machine according to claim 1, including another first functional element formed as a pregripper.

11. The printing machine according to claim 1, wherein said first sheet transport cylinder is a feed cylinder and said second sheet transport cylinder is an impression cylinder.